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Abstract: Burnout is a widespread occupational stress outcome among child care teachers, jeopardizing the quality of care and children's development. This study aimed at exploring the relationships between individual and organizational level characteristics (representing the six work-life areas control, reward, workload, community, fairness, and values) and burnout levels because these nested associations are an overlooked area. We applied a mixed-effects model with data at the individual level (level 1) and child care center level (level 2) using assessments of 220 child care teachers and their 59 directors of 59 child care centers in a Swiss community. We found that the child care center mattered for the experienced burnout levels and that lower control and reward on level 1 and higher workload on level 2 were associated with higher burnout levels among child care teachers. These results suggest the need to target the individual and the organizational levels to tackle burnout symptoms.

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Correlates of burnout symptoms among child care teachers – A multilevel modeling approach

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Abstract

Burnout is a widespread occupational stress outcome among child care teachers jeopardizing care quality and hence children's development. This study aimed at exploring the relationships between individual and organizational level characteristics and burnout levels because these nested associations are one overlooked question in child care workforce research. The included characteristics reflect the six work-life areas: control, reward, workload, community, fairness, and values. We applied a mixed effects model with data at the individual level (level 1) and child care center level (level 2) using assessments of 220 child care teachers and their 59 directors working in 59 child care centers in a Swiss community. We found that 19% of variability of burnout symptoms was at the child care center level. Further, the analysis yielded that lower job control and reward on level 1 and higher workload on level 2 were associated with higher burnout levels among child care teachers.

Keywords

Burnout symptoms - child care teachers - six work-life areas - two-level design - individual level - child care center level

Introduction

Burnout manifests as severe emotional, mental, and physical exhaustion due to long-term stressful work situations involving emotional demands (Schaufeli & Greenglass, 2001). The number of child care teachers suffering from burnout symptoms or at risk for burnout is high: international studies report numbers ranging from 10% to 56% (Koch et al. 2015; Løvgren, 2016; OECD, n.d.). Hence, child care teachers appear to be particularly susceptible to burnout (Barford & Whelton, 2010; Jungbauer & Ehlen, 2015; Koch et al., 2015; Løvgren, 2016; Maslach & Pines, 1977). The reasons for this susceptibility may be that child care work is typical “people work" that involves long hours of direct intimate contact with children, staff, and administration (Hildebrand & Seefeldt, 1986; Maslach & Jackson, 1981). Studies suggest that stress and exhaustion among child care teachers increase gradually with the amount of time spent with children on the floor (Løvgren, 2016; Maslach & Pines, 1977). Additionally, child care teachers work long hours and often face inadequate working environments and conditions (Baumgartner et al., 2009; OECD, n.d.; Whitebook et al., 2014). Studies report that breaks are often too short, non-existent, or spent with sleeping children (Kontos & Stremmel, 1988; Schreyer et al., 2014; Stremmel et al., 1993). Moreover, time for planning and preparation is insufficient, children's groups are too big, staffing levels are inadequate, and wage and benefits are low (OECD, n.d.; Schreyer & Krause, 2016; Viernickel et al., 2014; Whitebook et al., 2014). Intense emotional work combined with long working hours and inadequate working conditions may particularly deplete the energy and resources of child care teachers and foster the development of burnout symptoms.

Stressed, overworked, and burned-out child care teachers may withdraw emotionally from their work and the children (Curbow et al., 2000; Maslach et al., 2001; Whitebook et al., 2014). Hence, child care teachers are less responsive to children's needs and less able to engage in

compassionate and nurturing interactions with the children (Curbow et al., 2000; Whitebook et al., 1981). Additionally, burnout is associated with absenteeism, turnover intention, and turnover (Alarcon, 2011; Borritz, 2006; Leiter & Maslach, 2009). These attitudinal and behavioral burnout correlates further undermine care quality (Barford & Whelton, 2010; Goelman & Guo, 1998; Hildebrand & Seefeldt, 1986; Leiter & Maslach, 2009; Van Bogaert, Kowalski, Weeks, Van Heusden, & Clarke, 2013) by disrupting the relationship, attachment, and trust between children and child care teachers, which play a critical role in the learning processes and social development of young children (Ahnert, Pinquart, & Lamb, 2006; Bridges et al., 2011; National Research Council and Institute of Medicine, 2000). In sum, the consequences of burned-out child care teachers may be detrimental because child development is at stake (Manlove, 1993). Therefore, this article aims at deepening the understanding of burnout symptoms among child care teachers.

Burnout

Freudenberger (1974) and Maslach (1976) described burnout first in the seventies for professionals working in human services. Four decades later, an ample research body exists having investigated the phenomenon, its correlates, reasons, consequences, and prevention in and outside human services (Alarcon, 2011; Borritz et al., 2006). Despite these efforts, burnout rates among professionals in and outside human services remain high (Leiter, Bakker, & Maslach 2014). Burke (2015) points out that contemporary worklife is shaped by greater uncertainty and financial challenges because the consequences of the financial crisis in 2008 have taken their toll on professionals in the form of increased stress levels and burnout. Due to budget cuts in the public sector, this development is particularly pronounced in human services, such as child care.

While researchers agree that burnout is a cumulative, affective stress reaction to ongoing occupational strain and demands due to "a fundamental disconnect between the worker and the workplace" (Leiter & Maslach, 2004, p. 91), they disagree on a precise definition of burnout (Borritz et al., 2006; Maslach & Jackson, 1981; Maslach et al., 2001; Pines & Aronson, 1988; Shirom & Melamed, 2006). In the approach most widely applied, Maslach et al. (2001) define burnout drawing on the three dimensions *emotional exhaustion*, *cynicism (*also *depersonalization)*, and *inefficacy (*also *reduced accomplishment)*: Emotional exhaustion refers to feelings "of being overextended and depleted of one's emotional and physical resources" (Leiter & Maslach, 2004, p. 93), cynicism to "a negative, callous, or excessively detached response to various aspects of the job" (Leiter & Maslach, 2004, p. 93), and inefficacy to "feelings of incompetence and a lack of achievement and productivity in work" (Leiter & Maslach, 2004, p. 93). Maslach et al. (2001) emphasize that all three dimensions are necessary to capture burnout.

On the other hand, a handful of researchers (Kristensen et al., 2005; Pines & Aronson, 1988; Schaufeli & Greenglass, 2001; Shirom & Melamed, 2006) propose a definition of burnout drawing on only the energetic dimension, *emotional exhaustion*, while conceptualizing cynicism and inefficacy as consequences rather than characteristics of burnout. For example, Shirom (1989) describes burnout as "a combination of physical fatigue, emotional exhaustion, and cognitive weariness" (p. 33). This approach is corroborated by the finding that the three dimensions proposed by Maslach et al. (2001) are associated with different precursors and correlates (Alarcon, 2011; Kristensen et al., 2005). Both definitions share the idea that the energetic dimension, emotional exhaustion, is the core of burnout (Kristensen et al., 2005; Løvgren, 2016; Maslach et al., 2001; Shirom, 1989). Moreover, emotional exhaustion is the dimension most strongly related to teaching

(Näring et al., 2012) and especially pronounced among child care teachers (Jungbauer & Ehlen, 2015; Rentzou, 2012). Therefore, we focus on symptoms of emotional exhaustion in this study.

The Areas of Worklife by Maslach and Leiter in the child care workforce

Maslach and Leiter (1997) identified six key worklife areas in which a mismatch between individuals and their work environment contributes to burnout: *workload*, *control*, *reward*, *community*, *fairness*, and *values*. For this study, we draw on these six worklife areas. Leiter (2015) points about that "every time and place realizes these themes in distinctive ways" (p. 224). Therefore, we apply the AWL to the child care workforce drawing on the extant research literature.

The worklife area *control* reflects the extent of authority, autonomy, and decision-scope an employee has to pursue at work according to her or his own ideas and wishes (Leiter & Maslach, 2004). Experienced role conflict or role ambiguity may aggravate control problems (Leiter & Maslach, 2004). Hence, people are strained and upset if they feel themselves committed to certain outcomes but lack the control to accomplish them (Maslach et al., 2001). For child care teachers, researchers identified job control as a major job resource and the associated constructs role conflict and role ambiguity as major stressors (Khan, 2009; Manlove, 1994; Rudow, 2004).

The worklife area *reward* reflects whether professionals feel appropriately recognized for their work, either in financial or social terms or both (Maslach et al., 2001). In child care work, researchers found that insufficient rewards in terms of low wages and few benefits constitute major stressors among child care teachers worldwide, leading to various negative outcomes such as burnout and turnover (Goelman & Guo, 1998; Rudow, 2004; Whitebook et al., 1989; 2014).

The worklife area *workload* reflects whether employees either experience an excessive overload—too many demands in relation to too few resources—or have to perform complex tasks

that are not aligned with skills and experience (Leiter & Maslach, 2004; Maslach & Leiter, 1997). Both overload and excessive demands may deplete the employees' energy if they lack sufficient resources to cope with the demands. As a result, they may become drained and exhausted (Leiter & Maslach, 2004). In child care, the number of child care teachers in relation to the number of children (*staffing levels)* is a striking indicator for workload: The workload continuously increases with a higher child-to-adult ratio (Maslach & Pines, 1977). Earlier studies have corroborated the close relationship between low adult-child ratios and increased stress levels of child care teachers (Maslach & Pines, 1977; OECD, n.d.; Viernickel et al., 2014).

The worklife area *community* reflects whether employees feel socially connected and supported at work by either their co-workers or directors (Leiter & Maslach, 2004). Unresolved or constant conflicts are likely to contribute to feelings of frustration and hostility (Maslach et al., 2001). Research has shown that support by co-workers and directors was negatively correlated to burnout symptoms among child care teachers (Barford & Whelton, 2010; Rudow, 2004; Viernickel et al., 2014).

The worklife area *fairness* reflects the extent to which workers feel treated fairly at work, e.g., concerning promotions, evaluations, and work procedures, as well as respected (Leiter & Maslach, 2004). Unfair and disrespectful treatment, e.g., missing out on a promotion they felt entitled to, may be exhausting and upsetting (Leiter & Maslach, 2004). For the child care workforce, studies indicate that unfair treatment, for example in work schedules and task distribution, is a major stressor (Khan, 2009).

The last worklife area *values* reflects how closely the organization's goals are related to the objectives and beliefs of the workers (Leiter & Maslach, 2004). Employees are likely to feel distressed when they experience a conflict of values at work that, in turn, may increase burnout

symptoms (Leiter & Maslach, 2004). In child care work, the pedagogical framework epitomizes the values of the child care center. Studies have shown that a pedagogical framework per se and identification with it act as a resource among child care teachers (Blöchliger & Bauer, 2016; Viernickel et al., 2014).

Study aim

Halbesleben and Leon (2014) summarized the state of burnout research examining organizational level characteristics and found that these characteristics have contributed to individual burnout levels beyond and above individual level characteristics. For example, studies have revealed that average work hours (Park & Lake, 2005) and work environment dynamics (Li et al., 2013) on a hospital level were related to individual burnout levels among nurses. In addition, characteristics on a ward level, i.e., staff adequacy, leadership, and support for nurses, were associated with individual burnout levels among nurses (Leineweber et al., 2014).

To date, no study has explored the relationships between organizational level characteristics, e.g., the child care center level, and burnout levels among child care teachers. The studies cited to apply the AWL to the child care workforce have examined job characteristics only based on self-reports representing the individual level. Moreover, Goelman and Guo (1998) and Viernickel et al. (2014) assume that child care teachers share levels of experienced burnout symptoms in a child care center. Therefore, the present study aims at addressing these research gaps by (1) assessing whether and to what extent burnout symptoms among child care teachers cluster within child care centers and (2) exploring the relationships between both individual and organizational level characteristics and burnout symptoms among child care teachers. Thereby, the

individual and organizational level characteristics reflect the six worklife areas proposed by Maslach and Leiter (1997).

Method

Procedure

The study sample draws from a larger survey conducted in all publicly co-financed child care centers in a Swiss community in 2013. The survey invited all child care teachers and their directors to participate in the survey by asking the center directors by email to fill out the directors' questionnaire and to share the child care teachers' questionnaire with employees. The directors could choose to either forward the link to the online questionnaire or order hard copy forms. On average, the participants needed 30 minutes to complete the questionnaire.

An accompanying note briefly introduced the study and emphasized the confidentiality and voluntariness of the answers. Participants were asked to consent before filling out the questionnaire. The hard copy questionnaires were sent out together with an addressed envelope to ensure that participants could complete the questionnaire in private and send it to us directly. After data collection was completed, we ensured confidentiality by isolating from the database all personally identifying information, i.e., the names of the child care centers. All identifying records and notes were destroyed in accordance with established research ethics protocols. To be able to match the data of child care teachers and their directors, we substituted the child care center variable with a variable containing a random number.

Participants

For the present study, we included only child care teachers who specified the name of their child care center and whose directors participated in the survey as well. In total, the analysis comprised assessments of 220 child care teachers and their 59 directors who work in 59 child care centers. On average, a child care center has 3.73 participants with child care center sizes ranging from 1 to 11 participants.

On average, child care teachers were 30 years old (*SD* = 7.87). The majority (64%) was between 20 to 30 years old. They had been working in child care for an average of 10.34 years (*SD* = 5.82) and at the child care center included in this study for an average of 3.51 years (*SD* = 3.36*)*. Twenty-four percent of the participants had children and 95% were women. Most participants (79%) completed a vocational apprenticeship as a child care teacher, and only 19% held an academic degree.

The child care center directors were, on average, 40 years old (*SD* = 9.65). More than half of the directors (56.4%) were older than 40 years. On average, they had been working in child care for 19.01 years (*SD* = 7.98), as a director for 7.76 years (*SD* = 6.26) and at the child care center included in this study for 7.68 years (*SD* = 6.04). Thirty-five percent of the child care center directors had children, and 95% were women. Eighty-five percent completed a vocational apprenticeship as a child care teacher, 35 % held an academic degree, and 91% had an additional management qualification.

Measures

Dependent variable: Burnout symptoms

The four items of the *Copenhagen Psychosocial Questionnaire II* (COPSOQ II) measured the burnout symptoms experienced among child care teachers (Pejtersen, Kristensen, Borg, & Bjorner,

2010). The items stem from the *Copenhagen Burnout Inventory* (CBI) (Kristensen et al., 2005) which is based on the definition of burnout where only one, the energetic dimension, constitutes burnout. The items covered how tired and physically and emotionally exhausted the participants had felt during the last four weeks, e.g., "*How often have you been emotionally exhausted?"* The answering scale ranged from *1 (never)* to *5 (always)*. The Cronbach's alpha of .87 suggests that the scale has good reliability.

Independent variables

To reflect processes in child care work, we choose to employ instruments specific to the child care workforce instead of the *Areas of Worklife Scale* (Leiter & Maslach, 2002). The scales that measured the variables reward, values, the leadership aspect of community, and workload were particularly developed for child care teachers which assures high validity for this group (Schreyer et al., 2012a; Schreyer, Brandl, & Krause, 2012b). Well-validated scales assessed control and the team aspect of community reflecting specific resources for child care teachers, such as autonomy (control; Bond et al., 2006) and team collaboration (team climate; Anderson & West, 1998). The following classification into individual and organizational level measures was based on the degree of construct's variance between and within child care centers (details see section on data aggregation).

Individual level measures

Age. We asked the participants to indicate the year they were born.[1] ***Control.*** The six items of the *HSE job control scale* assessed the decision-scope range child care teachers had at their workplace, e.g., "*I have a choice in deciding how I do my work*." (Bond et al., 2006). ***Reward.*** Two items of the *AQUA-questionnaire* (Schreyer et al., 2012a) asked to what extent the participants were satisfied with their pay, e.g. "How satisfied are you with your pay compared to the pay in other child care centers?" The response scale for control and reward ranged from 1 *(I do not agree at all)* to 5 *(I completely agree)*. Both scales showed acceptable reliability with Cronbach's alphas of .77 for control and .74 for reward.

Organizational (child care center) measures

Assessments of child care teachers. ***Community.*** The questionnaire addressed two aspects of community: support by team members and support by directors. The 16 items of the *Team Climate Inventory (TCI)* (Anderson & West, 1998) measured to what extent the child care teachers felt supported by their team members and safe in their team, e.g., "*We support each other in new ideas and improved work procedures.*" The 20 items of the leadership quality scale of the AQUA-questionnaire (Schreyer et al., 2012a) measured the support of the child care center directors, e.g., "My director supports me if problems arise at work." ***Fairness.*** Six items from the AQUA questionnaire (Schreyer et al., 2012a) assessed whether child care teachers perceived the employment conditions (e.g., the working schedule, further education opportunities) as fair, e.g., "*The work schedule is fair*." ***Values.*** Three items of the AQUA-questionnaire (Schreyer et al.,

[1] Other control variables, e.g., working experience and formal qualification, were not significantly related to burnout levels and hence excluded from the analyses.

2012a), slightly adapted to the Swiss context, asked the participants whether they identified with the pedagogical framework of the child care center and whether the framework was implemented in daily practice.

Assessments of child care directors. ***Workload.*** The director's questionnaire gathered information about the workload of the child care teachers focusing on adequate staffing, e.g., "*The child-to-staff ratio is low*." The statements were based on the on the AQUA-questionnaire (Schreyer et al., 2012b) and slightly adapted to the Swiss context.

For all scales, the participants reported their agreement with the statements on a Likert scale ranging from 1 *(I do not agree at all)* to 5 *(I completely agree)*. All scales showed satisfactory to excellent reliability with Cronbach's alphas of .60 for workload, of .97 for community, of .75 for fairness, and of .79 for values. We computed the score for each scale by averaging the sum of the items by the respective number of items. While the six worklife areas by Maslach and Leiter reflect a mismatch between individuals and their work environment, it is assumed that higher control, reward, community, fairness, and values are associated with lower burnout levels and lower workload is associated with lower burnout levels. High scores in workload meant a low workload because the workload items were reverse, e.g., "the child-to-staff ratio is low".

Data analysis

We analyzed the data using the statistical software SPSS, version 22, for descriptive purposes, and the *nlme-package* of the open source statistical software R (Bliese, 2016; Pinheiro et al., 2016) for aggregation purposes and multilevel modeling.

Multilevel modeling

Because the study included nested data, i.e., child care teachers in child care centers, the statistical

analysis needed to reflect this structure. In line with Barr, Levy, Scheepers, and Tily (2013), we applied a linear mixed-effects model with maximal random effects to regress the burnout levels on the six worklife areas. Maximal random effects mean including random slopes for the independent variables, which allows the associations between the independent and dependent variables to vary across child care centers. We included random effects into the model based on the criteria of model convergence and variance size of the random effects. As long as the model did not converge, we simplified it further. Finally, we fit a model containing the random effects with the largest variance sizes. This kind of model accounts for the nested structure of the data while detecting random effects with minimal power even in small samples (Barr et al., 2013). For the analysis, we centered the included variables around the grand-mean, as recommended by Raudenbush and Bryk (2002).

The equation for the linear mixed-effects model we tested was:

Level 1: $$BU_{ij} = \beta_{0j} + \beta_{1j}(AG_{ij}) + \beta_{2j}(CO) + \beta_{3j}(RE) + r_{ij}$$

Level 2: $$\beta_{0j} = \gamma_{00} + \gamma_{01}(WO_{ij}) + \gamma_{02}(CM) + \gamma_{03}(FA) + \gamma_{04}(VA) + u_{0j},$$

$$\beta_{1j} = \gamma_{10} + u_{1j}$$

In this model, BU stands for burnout, β_{0j} stands for the intercept, $\beta_{1j}(AG_{ij})$ stands for age, $\beta_{2j}(CO)$ stands for control, $\beta_{3j}(RE)$ stands for reward, r_{ij} stands for the error term of the level 1 intercept, the β_{xj} stand for the slope coefficients, γ_{00} stands for the intercept of the level 2 regression, $\gamma_{01}(WO_{ij})$ stands for workload, $\gamma_{02}(CM)$ stands for community, $\gamma_{03}(FA)$ stands for fairness, $\gamma_{04}(VA)$ stands for values, γ_{0x} stands for the slope coefficients, and u_{0j} stands for the error term for the level 1 intercept. The subscripts *ij* refer to the *i*th child care teacher in the *j*th child care center.

The aim of the study was to understand the clustering of burnout symptoms within child care centers by exploring the variability in burnout levels accounted for by the different levels (individual and organizational) and to identify the individual and organizational level characteristics significantly associated with burnout levels. Therefore, we fitted three models: the null model (unadjusted), model 1 adjusted for the individual level variables, and model 2 adjusted for the individual and organizational level variables. Hence, we calculated variance partition coefficients for all three models and compared them to each other. Differences in the variance coefficients between the null model and model 1 as well as models 1 and 2 reveal the amount of explained variance by the independent variables on the child care teacher and child care center level.

Data aggregation

For the analysis, we aggregated assessments of child care teachers (individual level, level 1) to the child care center level (organizational level, level 2). We choose the child care center as the organizational level because child care teachers working at a child care center usually work closely together, e.g., they share space, staff, and supervised children, and they work under the same auspice and director(s). To aggregate self-reports to a higher level, child care teachers need to share perceptions of the constructs to a certain extent. In line with prior researchers' recommendations (Castro, 2002; James, Demaree, & Wolf, 1993; Schneider, White, & Paul, 1998), we based the aggregation of the AWL variables to the child care center level on the extent of the *variance between* and the *agreement within child care centers.*

For the between-child care center variance, the intra-class correlation coefficient *ICC[1]* examined the extent of variance in the target variable on the individual level explained by child care center properties, and the intra-class correlation coefficient *ICC[2]* examined the reliability of the child care center means (Bliese, 2002; Castro, 2002). For the within-child care center agreement, the $r_{wg(j)}$ reflected the within-group agreement in each child care center (Castro, 2002, James et al., 1993). Thresholds with a minimum of .12 for the *ICC[1]* (Schneider et al., 1998), a minimum of .70 for the *ICC[2]* (Castro, 2002), and a minimum of .70 for the $r_{wg(j)}$ (Castro, 2002; James et al., 1993) indicate that data aggregation to a higher level is justified.

Results

The aim of the study was to better understand burnout symptoms among child care teachers by (1) exploring the clustering of burnout symptoms within child care centers and (2) identifying the individual and organizational level characteristics significantly related to burnout levels among child care teachers.

First, we explored the data by means of descriptive statistics. The same percentage of child care teachers—one in five—reported that they suffered from burnout symptoms *often* respectively *rarely*; two in five child care teachers reported that they suffered from burnout symptoms *sometimes*. The mean scores of burnout symptoms' frequency were 1.5–4.5 (range: 1 to 5) across child care centers. Table 7 presents the means, standard deviations, bivariate correlations on level 1 and level 2, and Cronbach's alphas of all study variables.

Table 7: Means, standard deviations and intercorrelations among study variables

Variables	*M*	*SD*	1	2	3	4	5	6	7	8
Level 1										
1. Burnout symptoms	3.02	0.78	.87 (.90)	−.17*	−.29***	−.23***	−	−.30***	−.40***	−.33***
2. Age (years)	30.05	7.87	−.82	−	.03	−.17*	−	.12	−.00	−.00
3. Control	3.30	0.71	−.30***	−.00	.75 (.85)	.09	−	.33***	.31***	.24***
4. Reward	2.83	0.99	−.39***	−.01	.10	.74 (.83)	−	.13	.25***	.17*
Level 2										
5. Workload	3.66	0.63	−.46***	.01	.11	.23**	− (.60)	−	−	−
6. Community	3.89	0.50	−.41***	−.15*	.53***	.35***	.26***	.97 (.98)	.47***	.46***
7. Fairness	3.70	0.39	−.36***	−.03	.39***	.26***	.39***	.63***	.74 (.77)	.56***
8. Values	3.81	0.52	−.30***	−.08	.53***	.24***	.25***	.74***	.76***	.78 (.97)

Notes. Correlations above the diagonal are on the individual level (level 1) and correlations below the diagonal are on the child care center level (level 2). Cronbach's alpha estimates are presented along the diagonal, estimates on the individual level are left, estimates on the child care center level are right. At the level 1, $n = 220$; at the child care center level, $n = 59$.

*$p < .05$. **$p < .01$, ***$p < .001$, − not applicable

Second, the analyses examining data aggregation yielded that the variables *community*, *fairness*, and *values* met the thresholds for aggregation. However, the *ICC[2]* for *control* and *reward* and the rwg_j for *reward* were below the recommended threshold of .70. Table 8 presents the aggregation test results for the worklife area variables. Consequently, we included control and reward as individual level variables and community, fairness, and values as organizational level variables. Workload is an organizational level variable because the child care center directors assessed the workload in the child care center.

Table 8. Aggregation test results for the AWL variables

	Between-group variance		Within-group agreement
	ICC[1]	ICC[2]	r_{wgj}
Control	.19(1.87)*†	.47	.79†
Reward	.28(2.51)*†	.60	.67
Community	.41(3.55)*†	.72†	.84†
Fairness	.39(3.37)*†	.70†	.86†
Values	.43(3.86)*†	.74†	.86†

Notes. †Thresholds for aggregation are met. * $p < 0.05$.
Figures in parentheses are *F*-values, $F(58, 161)$.

Third, the ANOVA analysis (null model) assessing the clustering of burnout symptoms within child care centers showed that levels of reported burnout symptoms were not independent in child care centers, *ICC[1]*= .19, F (58, 161) = 1.87, $p < 0.01$. Child care teachers working in a child care center were also easily distinguishable by their average level of burnout symptoms, *ICC[2]* = .46. In total, 19% of the levels of reported burnout symptoms were explained by child care center properties, leaving 81% of the variance unexplained. This remaining variance lies at lower levels involving differences between the perceptions of child care teachers, random errors,

and organizational characteristics at a lower level. Including the individual level characteristics into the model (model 1) revealed that age, control, and reward together accounted for 14 % (i.e., 1-[0.42/.49] = .14) of the within-child care center variation in burnout levels among child care teachers. Including the organizational level characteristics workload, community, fairness, and values into the model (model 2) showed that these variables explained 54% of the between-child care center variance in burnout levels across child care centers beyond the effect of the individual level characteristics. Table 9 lists the parameters for all fitted models.

The linear mixed-effects model regressing both the individual and organizational level characteristics on burnout levels provided the basis for interpretation of the relationships between the independent variables and burnout levels. The model showed that individual as well as organizational level characteristics were significantly associated with individual burnout levels among child care teachers. More specifically, lower age, more control, and more reward were significantly related to lower burnout levels on the individual level. However, only one organizational level characteristic, workload, was significantly associated with burnout levels among child care teachers. Child care teachers who faced a lower workload in a child care center experienced burnout symptoms less often. The random effects for control and workload were non-significant, indicating that the associations between control and workload and burnout levels did not vary among child care teachers across child care centers. The individual level variables explained 11% (overall pseudo-R^2) of the variance in experienced burnout symptoms and the individual and organizational level variables together accounted for 20% (overall pseudo-R^2) of variance in reported burnout symptoms.

Table 9: Multilevel regression estimates for the effects of individual and organizational level variables on burnout symptoms

	Null model			Model 1			Model 2		
	Est.	*SE*	*t*	Est.	*SE*	*t*	Est.	*SE*	*t*
Level 1									
Intercept	3.06	0.07	43.94***	3.05	0.06	48.03***	3.03	0.06	54.68***
Age				−0.02	0.01	−2.59*	−0.02	0.01	−2.62**
Control				−0.23	0.08	−2.79**	−0.17	0.08	−2.03*
Reward				−0.14	0.05	−2.80**	−0.12	0.05	−2.46*
Level 2									
Workload							−0.28	0.10	−2.87**
Community							−0.21	0.15	−1.40
Fairness							0.07	0.23	0.31
Values							−0.07	0.20	−0.34
Random effects (variances)				Est.	*SE*		Est.	*SE*	
Level 1 (within child care centers)									
Control				0.06	0.24		0.05	0.23	
Level 2 (between child care centers)									
Workload							0.00	0.00	
σ^2_{within}		0.12			0.09			0.04	
σ^2_{u0}		0.49			0.42			0.43	
df		161			158			54	
Pseudo R^2					0.11			0.20	

Note: Est. = estimate, σ = variance. *$p < .05$. **$p < .01$, ***$p < .001$. Workload is reverse coded, e.g., high scores mean low workload.

Discussion

The study intended to further the understanding of burnout symptoms among child care teachers. We found that (1) burnout symptoms among child care teachers clustered strongly within child care centers and (2) control and reward on an individual level, and workload on a child care center level were significantly associated with burnout symptoms among child care teachers.

We want to begin by discussing data aggregation. The indices assessing data aggregation indicated modeling control and reward at the individual level and community, fairness, and values at the child care center level. This classification appears plausible because control is dependent on the specific function of the child care teacher, e.g., leadership roles, specific tasks and responsibilities, and reward in terms of pay satisfaction is dependent on the total household income as well as the family situation of the child care teacher. On the other hand, community, fairness, and values may primarily reflect the shared environment (e.g., support by team members, director, work schedule, pedagogical framework) in the child care center.

In our sample, 19% of the burnout symptoms levels among child care teachers were attributable to the properties of the child care center. This variation in burnout symptoms between child care centers is higher than the variation across work-units of 4% to 9% usually found in applied organizational research (Bliese & Jex, 2002; Consiglio, Borgogni, Alessandri, & Schaufeli, 2013; González-Morales, Peiró, Rodríguez, & Bliese, 2012; Park & Lake, 2005). Burnout symptoms may cluster so strongly within child care centers because child care teachers work closely together, are directly affected and strained by burned-out co-workers, and because child care centers are small work units. This high variation in burnout symptoms between child care centers underpins that the work-unit, e.g., the child care center, indeed matters for the levels of burnout symptoms experienced among child care teachers. This is in line with

previous findings about child care teachers stating that they experience similar levels of burnout symptoms in a given center, e.g., Goelman and Guo, 1998 and Viernickel et al., 2014.

We identified three worklife areas significantly related to burnout symptoms among child care teachers: control and reward on an individual level and workload on the child care center level. While workload and control have resonated with the emotional exhaustion dimension of burnout throughout research across many occupational groups (Portoghese, Galletta, Coppola, Finco, & Campagna., 2014; Seidler et al., 2014), the importance of rewards may be a characteristic more specific to the child care workforce. The strong relationship between individual perceived workload and individual burnout levels has been steadily established based on the assumption that stressors mainly have an effect on the individual level (Bliese & Jex, 2002; Bowling, Alarcon, Bragg, & Hartman, 2015). However, our results emphasize the importance of workload on the work-unit, e.g., the child care center level, for burnout levels among child care teachers. This result is consistent with prior results that staffing levels, a proxy for workload, on a ward level and work hours were associated with individual burnout levels among nurses (Leineweber et al., 2014; Park & Lake, 2005; Van Bogaert et al., 2013). In institutionalized child care, the workload is mainly dependent on adequate staffing (child-to-staff ratio) because every child multiplies the work in terms of individual interactions, the number of documentations, and conversations with parents etc. When staffing levels are inadequate, child care teachers may have to spend more time with the children and less time on administrative tasks, such as preparation, planning, and team meetings. These tasks would structure and facilitate the work in the long run and would strengthen the team collaboration. Moreover, more time with children has been shown to be positively associated with higher emotional exhaustion levels among child care teachers (Løvgren, 2016; Maslach & Pines, 1977). Therefore, one reason for the high association between workload on the child care center

level and burnout levels among child care teachers may be the long hours child care teachers have to spend with the children when staffing levels are inadequate.

On the other hand, more perceived control and rewards were associated with fewer burnout symptoms. This finding is in line with prior research (Goelman & Guo, 1998; Løvgren, 2016) highlighting the importance of high control and the associated constructs autonomy (high), role conflict (low), and role ambiguity (low) for low burnout levels among child care teachers. The importance of these job characteristics may be due to the many simultaneous tasks and roles a child care teacher has to perform at the same time, e.g., documenting while caring for and educating children, meeting the needs of children, parents, and administration alike. Throughout child care workforce research, reward in terms of wages and benefits has surfaced as a job characteristic permeating various outcomes among child care teachers, e.g., job satisfaction, turnover, and burnout (Goelman & Guo, 1998; Royer & Moreau, 2015; Viernickel et al., 2014; Whitebook et al., 1989). Wages and benefits are low in child care, and child care teachers are dissatisfied with their pay, which they expressed loudly in strikes and demonstrations in the United States and Germany in 2015 (Fenech et al., 2009; Kusma, Mache, Quarcoo, Nienhaus, & Groneberg, 2011; Schreyer et al., 2014; Whitebook et al., 2014). Hence, the importance of rewards in terms of pay satisfaction for individual burnout symptoms is in accordance with previous studies (Fenech et al., 2009; Hossain et al., 2012; Kusma et al., 2011; Viernickel et al., 2014; Whitebook, 1999). One explanation is that child care teachers have to work longer working hours due to the low pay to ensure that their needs are met, which drains resources and energy. Another explanation is that insufficient financial resources increase stress levels in general and hence foster the development of burnout symptoms. A third explanation is that financial reward is a part of appreciation. Combined with the general low appreciation of child care, low pay and low pay satisfaction may contribute to feelings of being underappreciated. Research has well documented that an imbalance of workload and rewards

is associated with higher burnout levels (Van Vegchel, de Jonge, Bosma, & Schaufeli, 2005; Viernickel et al., 2014).

Although earlier studies found that social support (community) (Goelman & Guo, 1998), fair treatment (fairness) (Khan, 2009), and the pedagogical approach (values) (Viernickel et al., 2014) on an individual level were related to burnout levels among child care teachers, the relationships between community, fairness, and values on a child care center level were not significantly related to burnout levels in our study. This finding may be owed to the close association between workload and burnout levels that covers the associations of community, fairness, and values on the child care center level with burnout levels. Another explanation is that community, fairness, and values only matter on an individual level.

Strengths and limitations of the study and future research directions

First, the study adds to the existing literature by showing that that child care teachers' burnout levels cluster within child care centers and organizational level characteristics are related to burnout levels among child care teachers. Second, the study relied on an organizational level assessment of workload (given by directors) and not an individual level assessment, the perceived workload, which most previous studies have examined. The director's assessment may reflect the actual workload more "objectively" than individual assessments would. Nonetheless, future research should incorporate also objective measures of workload, e.g., observational measures of actual child-to-staff ratios, because of the high association between workload and burnout levels. Third, the study extends the existing research by applying the AWL to the child care workforce.

On the other hand, the first key limitation of the study is the cross-sectional design that does not allow causal inferences to be made. Future research should include longitudinal designs to assess the effects of varying control, reward, and workload on burnout levels over

time. Second, we employed the COPSOQ instead of the Maslach Burnout Inventory (MBI), which is the instrument most often employed in research, to assess burnout symptoms. While the use of different burnout measurement instruments advances the state of burnout research and prevents the burnout syndrome from becoming equal to the syndrome measured by the MBI (Kristensen et al., 2005), it may limit the comparability of the results to previous findings. Third, we used scales specific to child care teachers to assess the six worklife areas instead of the Areas of Worklife Scale (Leiter & Maslach, 2004). Scales specific to the child care workforce strengthen our understanding of processes in child care work, but the employment of such specific scales may further limit the comparability of the results to previous findings and make it difficult to generalize the results to other professional groups. Fourth, the study has included variables on the child care center level, but it appears plausible that characteristics on other levels, e.g., the work group or the governing agency level, are also related to burnout levels among child care teachers. Variables on these levels may capture additional variation in job characteristics which the child care center level does not reflect. Therefore, we want to encourage researchers to pursue examining relationships between different higher level characteristics and burnout levels among child care teachers in future research.

Practical implications

The results suggest that interventions tackling burnout should target the organizational level, as well as the individual level. The study identified three target points: on the individual level, *control* and *reward*, and on the organizational level, *workload*. While work with young children requires certain routines and predictability, which limits control over work, pedagogical approaches concede different extents of work autonomy. A pedagogical approach that enables teachers to plan the day and activities autonomously and pursue individual projects with

children (e.g., the Reggio Emilia approach; Shelley & Flessner, 2013) could strengthen the experience of control among child care teachers. Previous research (e.g., Royer & Moreau, 2015; Whitebook et al., 2014; Schreyer et al., 2014) has repeatedly identified inadequate financial reward in terms of low pay as a major stressor in child care work, and the present findings lend support to the notion that pay satisfaction also matters. Consequently, pay raises appear inevitably to increase pay satisfaction and may reduce the stress levels of child care teachers. Finally, intervention measures need to address the child care teachers' workload. Staffing levels need to be increased to reduce the workload. Possible measures could involve lowering the child-to-staff ratios by employing additional child care teachers as well as floaters, and filling vacant positions. Maintaining a lower child-to-staff ratio would also allow the child care teachers to perform their administrative, planning, and preparation tasks and contribute to fewer hours spent with the children. Measures taken to increase control and reward and to reduce the workload may help keep child care teachers healthy, which, in turn would enable them to offer high-quality child care. But we should view these suggestions with due care, because we are not able to determine causal relationships owing to the cross-sectional study design. Additional well-designed studies are needed to investigate the direction of the relationships and to examine how and where to implement the recommendations.

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